Geologic Map of the Northern Sand Springs Range, Churchill County, Nevada

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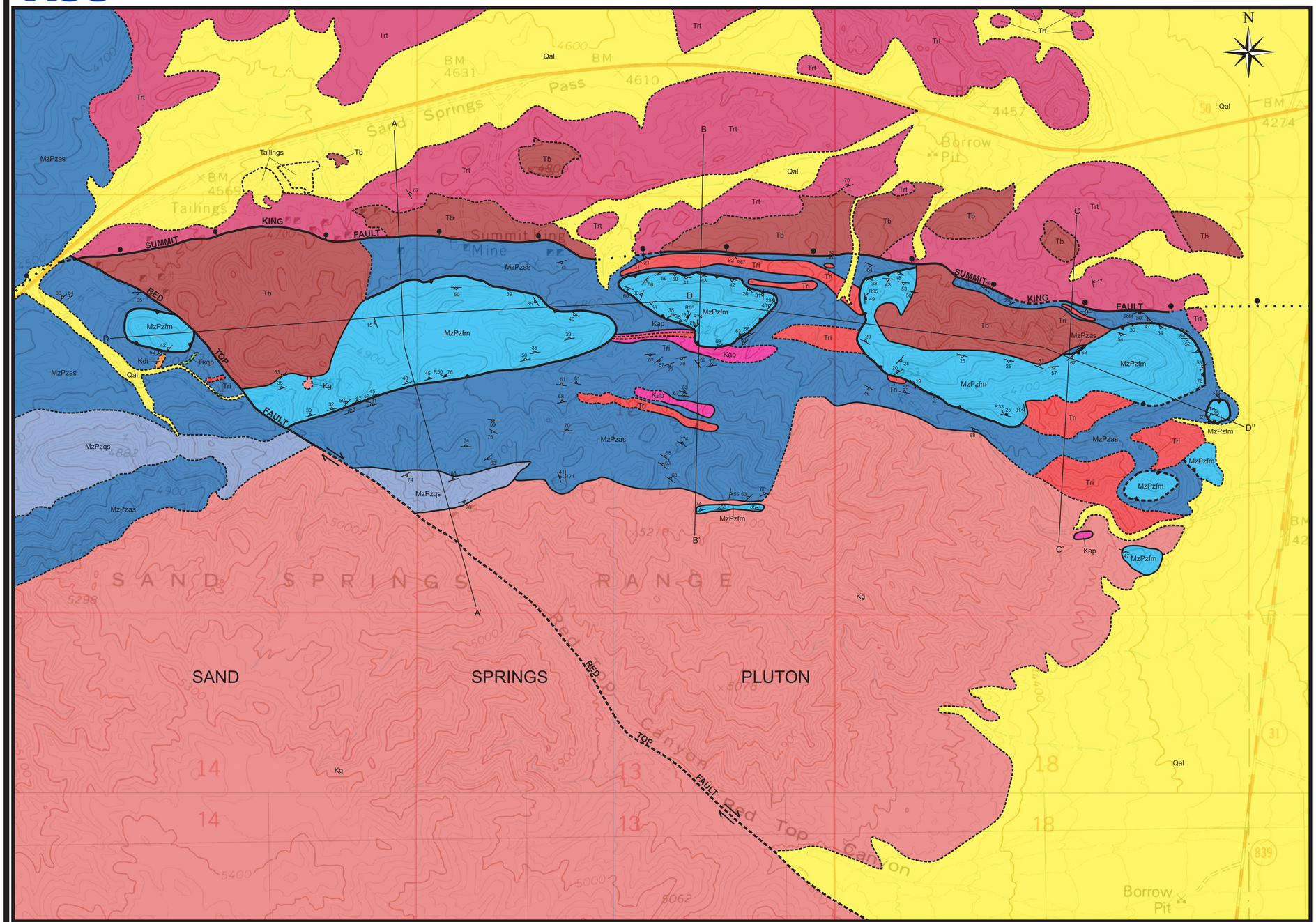

LEGEND

Quaternary

- **Qal** — **Quaternary alluvium.** Unconsolidated sand, gravel, and mud in active or recently active stream channels and alluvial fans mapped in relatively flat topographic lows using satellite imagery.

Tertiary

- **Trt** — **Tertiary rhylite tuff.** White rhyolite tuff which weathers gray. Contains 40% quartz and 50% albite mostly ≤ 1 mm but some large (0.5-2.0 cm) subhedral-euhedral crystals, and trace biotite and subhedral hornblende ≤ 2 mm. A highly fractured and friable slope-former which exhibits compaction foliation of 2-40 mm fiamme and is locally hydrothermally altered to a pale green color. Primarily exposed north of Summit King Fault.
- **Tb** — **Tertiary basalt.** Gray basalt which weathers dark brown, and contains 20-30% fishscale 0.5-5.0 mm albite crystals in an aphanitic mafic matrix. Cliff-former which is very resistant. Flow foliation evident locally.
- **Tri** — **Tertiary rhyolite intrusion.** White to cream and tan rhyolite. Contains 90% quartz crystals that are up to 0.35 mm in an aphanitic quartz matrix which also includes trace muscovite and plagioclase. Moderately resistant and slightly friable. Unit presents itself mostly as E-W trending sills or dikes but also as larger masses.

Cretaceous

- **Kg** — **Cretaceous granite.** White granite which weathers off-white to brown. Phaneritic crystals consisting of 35-45% ~4 mm quartz, 40% ~8 mm plagioclase, 0-16% ~8 mm hornblende, 8-10% ~5 mm biotite, and 1-5% muscovite, which are anhedral to subhedral. Highly resistant and flow foliation present locally. Primarily exposed as the Sand Springs Pluton.
- **Kap** — **Cretaceous aplite.** Grey to dark grey aplite, weathers cream to tan to brown. Minerals consist of ~60% 1-3 mm plagioclase, ~40% 1-3 mm quartz, and trace biotite. Highly resistant and non-friable.This unit is finer grained than other Cretaceous intrusions, and this is presumed to be due to its emplacement as shallow sills or dikes.
- **Kdi** — **Cretaceous diorite.** Grey to black diorite. Porphyritic with a matrix of 100% ~0.5 mm plagioclase (possibly anorthite) crystals. Porphyries are ~6 mm hornblende with some opaques. Highly resistant and non-friable. Unit is present as sills or dikes.

Triassic

- **Trqp** — **Triassic quartz porphyry.** White to cream to light tan quartz porphyry. Weathers grey to black and contains a metallic sheen on some surfaces. Matrix is nearly 100% quartz with ~3 mm quartz porphyries that constitute 5% of the unit with trace feldspar. Contains a penetrative metamorphic foliation, is lightly resistant, and weathers to a moderate slope former.

Mesozoic or Paleozoic

- **MzPzfm** — **Mesozoic or Paleozoic foliated marble.** White and gray foliated marble in which the foliation is defined by thin (1-4 mm), sometimes folded, white bands of thermally altered up to 3.0 mm calcite crystals within a gray matrix of 0.18-0.25 mm calcite crystals. Very firm cliff-former. Thermal alteration due to Cretaceous intrusions, Tertiary intrusions, and related hydrothermal activity locally obliterates foliation. Primarily exposed on klippen.
- **MzPzas** — **Mesozoic or Paleozoic andalusite schist.** Very dark-gray andalusite schist containing distinctive 5% by volume 0.5-1.0 mm andalusite crystals in an aphanitic matrix containing graphite, biotite, and quartz. Abundant graphite is from a carbon-rich shale protolith. Slope former which is highly friable when weathered. Remnant bedding seen locally (most often on west side of map area) and is evidenced by interbedded MzPzqs. Schistosity evidenced by fracturing into thin sheets.
- **MzPzqs** — **Mesozoic or Paleozoic quartz schist.** White to cream to light-brown quartz schist which weathers light-red to brown. Contains 98% 0.35-0.50 mm quartz crystals, and trace muscovite from an inferred quartz sandstone protolith. Slope former which is highly friable when weathered. Remnant bedding seen locally (most often on west side of map area), and schistosity is evidenced by fracturing into thin sheets. Interbedded with MzPzas and locally calcareous. Primarily exposed in distinct beds on western side of map area near Kg contact.

- Strike and dip of original bedding (S_0)
- Strike and dip of compaction foliation (S_1)
- Strike and dip of metamorphic foliation (S_2)
- Strike and dip of fault surface, including rake of slickenlines (S_3)
- Contact
- Contact approximately located
- Strike-slip fault
- Strike-slip fault approximately located
- High angle fault, ball on downthrown side
- High angle fault approximately located, ball on downthrown side
- High angle fault covered, ball on downthrown side
- Thrust fault, teeth on upper plate
- Thrust fault approximately located, teeth on upper plate

Scale 1:8000

0 0.25 0.5 0.75 1 Miles